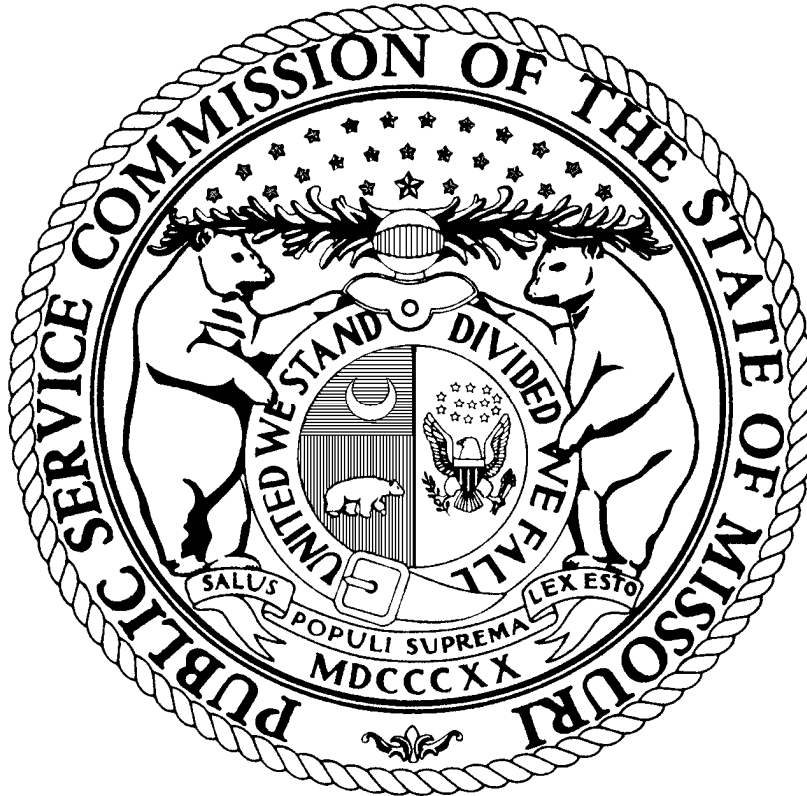# Missouri Broadband Report

A report to the Missouri State Senate Committee on Commerce, Consumer Protection, Energy and the Environment

Missouri Public Service Commission

December 2011

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Executive Summary

The Missouri State Senate Committee on Commerce, Consumer Protection, Energy and the Environment (Senate Committee) requested the Missouri Public Service Commission to produce a report addressing various broadband-related issues. This report attempts to address the issues presented in this request. The Federal Communications Commission's National Broadband Plan is reviewed by identifying the FCC's broadband goals along with a status report of the FCC's agenda to implement the plan. Listed below are the main observations and findings contained in this report:

The FCC and the State Broadband Data and Development program currently have different assessments of broadband availability. For example, current mapping efforts suggest 1% of Missourians lack access to broadband service while the FCC's analysis suggests 13.5%. In comparisons with other states, the most recent FCC analysis also suggests Missouri may lag in broadband availability, especially in rural areas but Missouri may be catching up. This report provides various maps relating to Missouri's broadband availability as well as the identification of specific counties that might be considered unserved and underserved.

The gap between advertised versus actual broadband speeds appears to be closing for wireline broadband services. This gap is still being studied for wireless broadband service.

The Missouri PSC has solicited and obtained input for this report. Various stakeholders indicate broadband deployment barriers need to be addressed (i.e., prohibitive cost of providing broadband service to rural areas, excessive rights of way fees, taxes, pole attachments). In addition, certain stakeholders also suggest a need to stimulate broadband adoption/demand by making broadband service more affordable especially for low-income consumers. Several entities cite the FCC's recent decision to reform the federal universal service fund and intercarrier compensation as a significant decision with implications that may impact broadband availability. Suggestions include adopting policies streamlining burdensome processes and promoting competition. One commenter encourages municipalities to provide broadband service. Another commenter indicates rural electric cooperatives are leading the way in new smart grid applications.

Broadband service rate information for a sampling of companies is provided. Wireline broadband service rates among the sampled companies range from $14.95 to $199.95 per month depending on broadband speed. Wireless broadband rates range from $10 to $80 per month depending on the data allowance offered by the plan. Difficulties in obtaining and providing rate comparisons are discussed.

A variety of survey results relating to broadband are revealed. Survey results of residential Missourians reveal broadband speed is the most important factor in choosing the type of broadband connection and provider. Overall, most residential survey respondents appear satisfied with their broadband speed and reliability while most respondents are dissatisfied with the number of broadband providers available in their area. Most residential Missouri survey respondents think it

is important for all Missouri residents to have access to computers and the Internet. A separate survey of Missouri business consumers suggests general satisfaction with their broadband service and indicates a robust broadband connection is very important in their day to day operations. Nearly all Missouri business survey respondents indicate it would be beneficial if the broadband environment is enhanced in their area. Somewhat slightly conflicting results on satisfaction of current broadband service are also revealed for surveys taken at regional and state fairs along with feedback obtained from the state's web site for broadband speed tests. Study results are also provided for a recently released national study of broadband adoption issues.

Barriers to broadband deployment are identified along with what action, if any, has been taken at the federal level to address them.

In regard to recommendations and overall policy, the FCC is leading the effort to expand broadband availability and has initiated many different proceedings designed to address broadband-related issues and expand broadband availability. The FCC should be given more time before states attempt to initiate any additional action. Nevertheless, if there is a strong desire for state action then consideration might be given to the following options:

a.) Use funding from the Missouri USF to help with broadband deployment and adoption. For example, funding could be used to supplement federal funding for providing broadband service to high-cost areas. In addition, the Missouri USF could be used to help make broadband service more affordable for low-income consumers by providing discounted broadband service rates. Such action, if desired, would require changes to Missouri statutes to clearly enable the Missouri USF to be used for such purposes. In addition, the issue of whether wireless providers should be assessed to pay into the Missouri USF will need to be addressed as well as whether wireless providers could receive Missouri USF support.

b.) Pursue state authority to regulate pole attachments. If so, Missouri statutory change will be needed to enable such authority.

c.) Make it easier for municipalities to provide broadband service. For instance allow municipalities to provide broadband service with voice and video services.

d.) Strive to create programs stimulating demand for broadband services.

e.) Further promote public/private partnerships to expand broadband deployment and adoption.

Introduction

The Senate Committee requested the Missouri Public Service Commission produce a report addressing various broadband-related issues. Schedule No. 1 is a copy of the May 13, 2010 letter with this request. The report's deadline of December 1, 2011 was later extended to December 29, 2011 based on subsequent discussions between Missouri PSC and Senator Lager's Office. The extension was prompted by feedback from stakeholders who were requesting additional time to review a recently released FCC decision with significant implications on broadband deployment.

This report is primarily organized based on the issues presented in the Senate Committee's letter; however, some issues have been separated for ease of discussion. In addition, one section briefly describes the State of Missouri's broadband efforts. As a result, this report is divided into the following nine sections:

I.   Review of the FCC's National Broadband Plan.

II.   Missouri's Broadband Initiative

III.   An Assessment of the Current Level of High-Speed Internet Access Service in Missouri.

IV.   An Identification of Unserved and Underserved Areas.

V.   An Assessment of Broadband Rates.

VI.   An Assessment of Advertised versus Actual Broadband Speeds.

VII.   Solicitation of Input from the Public and All Providers of Broadband Services.

VIII. Barriers to Broadband Deployment.

IX.   Recommendations and Potential Public Policy Decisions to Increase Deployment and Availability of Broadband Services.

An understanding of certain concepts may be helpful in aiding this discussion. Therefore this report will provide a brief explanation of broadband, broadband speed, broadband technologies, federal broadband policy and broadband service regulation.

Broadband

The term "broadband" commonly refers to high-speed Internet access that is faster than traditional dial-up access. For years the Federal Communications Commission considered broadband service as having a transmission speed of at least 200 kbps.[1] Although the FCC has updated this speed threshold, a minimum transmission speed of 200 kbps remains the basis for current broadband data collection efforts.

Broadband speed

Broadband speed can significantly impact the time it takes to download or upload information. Broadband speed is measured in bits per second.[2] Typically broadband speed is labeled as kilobits per second (kbps), megabits per second (Mbps) or gigabit per second where one kbps delivers 1,000 bits per second; one Mbps delivers 1,000,000 bits per second; and one Gbps delivers 1,000,000,000 bits per second. To put these measurements into perspective a smaller

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[1] Report (First Broadband Deployment Report); CC Docket No. 98-146 *In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*; FCC 99-5, released February 2, 1999.

[2] A bit is the smallest unit of information a computer can process. A bit contains less information than the term "byte" whereby one byte typically contains eight bits of information. Bits versus bytes are typically represented by "b"versus "B", respectively. The number of bits delivered per second is 1,000 bits for one kilobit (Kbps), 1,000,000 bits for one megabit (Mbps) and 1,000,000,000 for one gigabit (Gbps).

number of bits per second will require significantly longer times to transfer information, as shown below:

Approximate Times to Download at Various Speeds[3]		
	Digital Photo	**30 minute TV show**
200 kbps or less	2 minutes	6:15 hours
Greater than 3 Mbps and less than 6 Mbps	6 seconds	13 minutes
Greater than 25 Mbps and less than 50 Mbps	.67 seconds	1:10 minute
1 Gbps	.67 seconds	2 seconds

Broadband Technologies

Broadband service can be provided through a variety of different broadband technologies. The actual broadband speed available for a particular type of technology can depend on multiple factors causing broadband speed to vary between companies using the same type of technology. Likewise broadband speed can differ among customers served by the same company using a particular type of technology. A broadband service subscriber can even experience varying broadband speeds throughout the day given network congestion and other considerations. Nevertheless, listed below are the maximum speeds that might be expected for a given type of technology:

Technology	**Approximate Maximum Download Speeds[4]**
Cable Modem	100 Mbps
Digital Subscriber Line (DSL)[5]	ADSL & SDSL: 6 Mbps; VDSL: 50 Mbps
Fixed Wireless/WiMax	40 Mbps
Cellular:	3 G: 1.5 Mbps; 4G 12 Mbps
Satellite	2 Mbps

Dial-Up *(for comparison purposes)*	56 kbps

Federal Broadband Policy

Congress has provided guidance on broadband policy for the United States. Most notably Congress desires a policy to promote the continued development of the Internet and preserve the

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[3] *Missouri Broadband Summit Program Overview, October 26-27, 2010, Truman Hotel, Jefferson City, MO.*

[4] *www.mobroadbandnow.com web site. See "Broadband Types" within the portion of the web site entitled "Broadband 101".*

[5] *Different varieties of DSL exist. ADSL refers to Asymmetric DSL service and provides a subscriber with different download and upload speeds. SDSL refers to Symmetric DSL where download and upload speeds are the same. A newer form of DSL service is very-high bitrate DSL that offers faster broadband speeds.*

vibrant and competitive free market that presently exists for the Internet, unfettered by federal or state regulation.[6] In addition, access to advanced telecommunications and information services should be provided in all regions of the nation.[7] Other federal statutes provide additional guidance.[8]

The FCC has established certain principles to "…ensure that broadband networks are widely deployed, open, affordable, and accessible to all consumers…"[9] Specifically the FCC maintains the following four principles as part of the FCC's ongoing policymaking activities: (1) consumers are entitled to access the lawful Internet content of their choice; (2) consumers are entitled to run applications and services of their choice, subject to the needs of law enforcement; (3) consumers are entitled to connect their choice of legal devices that do not harm the network; and (4) consumers are entitled to competition among network providers, application and service providers, and content providers.

More recently the FCC established the following three basic rules designed to provide greater clarity and certainty to preserving the Internet as an open platform for innovation, investment, job creation, economic growth, competition and free expression:[10] (1) Broadband providers must disclose the network management practices, performance characteristics and terms and conditions for their broadband services; (2) Broadband providers may not block lawful applications and services, including applications that compete with their voice or video telephony services; and (3) Fixed broadband providers may not unreasonably discriminate in transmitting lawful network traffic.

Broadband Service Regulation

Congress has given the FCC discretion on how broadband service should be regulated, if at all. To date, the FCC has applied minimal regulation to broadband service by specifically classifying various broadband services as "information services" rather than a "telecommunications service".[11] Information service classification translates into minimal, if any, regulations applied by

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[6] *47 U.S.C § 230(b).*

[7] *47 U.S.C. § 254(b)(2).*

[8] *For example see 47 U.S.C. §1301 whereby Congress provides four findings related to broadband deployment and adoption.*

[9] *Policy Statement; CC Docket No. 02-33 In the Matter of Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, FCC 05-151, released September 23, 2005.*

[10] *Report and Order, GN Docket No. 09-191 In the Matter of Preserving the Open Internet, FCC 10-201, released December 23, 2010.*

[11] *The FCC has repeatedly classified various broadband services as an information service. For instance, cable modem broadband service (Cable Modem Declaratory Ruling, FCC-277, released March 15, 2002); wireline broadband service (Report and Order and NPRM, CC Docket No. 02-33 In the Matter of Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, FCC 05-150, released September 23, 2005); broadband*

the FCC. For all practical purposes, the FCC's classification of broadband services as an information service preempts state authority therefore preventing any state from attempting to regulate broadband service.

I.   Review of the Federal Communications Commission's National Broadband Plan

This section reviews the FCC's National Broadband Plan by first reviewing the legislative directive for such action. The six goals created by the FCC's plan are identified including the FCC's National Broadband Availability Target of ensuring every American has access to affordable broadband service with actual speeds of 4 Mbps (download) and 1 Mbps (upload). The FCC's Broadband Action Agenda is described whereby the FCC has listed 64 key actions, proceedings and initiatives intended to implement the national broadband plan during the initial two years. Finally, the FCC's progress in completing the anticipated action items is revealed along with brief summaries of some of the more noteworthy FCC decisions so far.

The Directive to Create a National Broadband Plan

The American Recovery and Reinvestment Act of 2009 (the Act) directed the FCC to develop a National Broadband Plan. The Act stated the plan shall include:

(A) An analysis of the most effective and efficient mechanisms for ensuring broadband access by all people of the United States.
(B) A detailed strategy for achieving affordability of such service and maximum utilization of broadband infrastructure and service by the public.
(C) An evaluation of the status of deployment of broadband service, including progress of projects supported by the grants made pursuant to this section; and
(D) A plan for use of broadband infrastructure and services in advancing consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, worker training, private sector investment, entrepreneurial activity, job creation and economic growth and other national purposes.

The FCC's Six Long-Term Broadband Goals

In response to this directive the FCC released its National Broadband Plan on March 16, 2010. The plan establishes the following six long-term goals[12]:

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over power lines (Memorandum Opinion and Order WC Docket No. 06-10 In the Matter of United Power Line Council's Petition for Declaratory Ruling Regarding the Classification of Broadband over Power Line Internet Access Service as an Information Service, FCC 06-165, released November 7, 2006).

[12] *FCC National Broadband Plan, pages XIV and XV of the plan's Executive Summary as well as pages 9-11.*

1. At least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 megabits per second.
2. The United States should lead the world in mobile innovation, with the fastest and most extensive wireless networks of any nation.
3. Every American should have affordable access to robust broadband service, and the means and skills to subscribe if they so choose.
4. Every community should have affordable access to at least 1 gigabit per second broadband service to anchor institutions such as schools, hospitals, and government buildings.
5. To ensure the safety of American communities, every first responder should have access to a nationwide, wireless, interoperable broadband public safety network.
6. To ensure that America leads in the clean energy economy, every American should be able to use broadband to track and manage their real-time energy consumption.

The FCC's National Broadband Availability Target

At the heart of the FCC's National Broadband Plan is the establishment of a National Broadband Availability Target. This target/goal attempts to ensure every household and business location in America will have access to affordable broadband service with actual download speeds of at least 4 Mbps and actual upload speeds of at least 1 Mbps.[13] The FCC has a variety of reasons for selecting the 4 Mbps/1 Mbps speeds as the National Broadband Target. In general the FCC notes this speed is comparable to what the typical broadband subscriber receives today and what many consumers are likely to use in the future. Moreover this speed is necessary for high quality video and the simultaneous usage of multiple applications.[14]

The FCC estimates 290 million Americans (or 95% of the US population) already have access to broadband infrastructure capable of these speeds; however, 14 million Americans living in 7 million housing units do not have such access. In order to bring broadband service to these 7 million housing units by 2020 the FCC estimates a total cost $33.4 billion. According to the FCC this cost will partially be recovered by broadband revenues totaling $9.1 billion leaving a broadband availability gap of $24.3 billion.[15] The FCC's plan proposes to fund the broadband availability gap by reforming the current federal high-cost universal service fund and eventually replacing this fund with the Connect America Fund and a Mobility Fund.

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[13] *FCC National Broadband Plan; page 135.*

[14] *The FCC officially upgraded this speed from 200 kbps in the FCC's Sixth Broadband Progress Report released July 20, 2010; FCC 10-129. See FCC's discussion beginning on Paragraph No. 9.*

[15] *FCC National Broadband Plan; pages 136-137.*

FCC's National Broadband Plan Other Findings/Recommendations

The FCC's National Broadband Plan contains numerous other findings and recommendations. Rather than attempt to provide a detailed overview of the plan in this portion of the report such a summary is provided in Schedule No. 2. Schedule No. 2 is a detailed summary of the FCC's National Broadband Plan as prepared by the MoPSC Staff for the MoPSC Commissioners. An important consideration to the FCC's National Broadband Plan is the plan will change. For example the FCC says, "The plan is in beta, and always will be. Like the Internet itself, the plan will always be changing-adjusting to new developments in technologies and markets, reflecting new realities, and evolving to realize the unforeseen opportunities of a particular time."[16]

The FCC's Broadband Action Agenda

In order to implement the recommendations contained in the National Broadband Plan the FCC created the Broadband Action Agenda listing 64 key actions, proceedings and initiatives the FCC intends to undertake in 2010 and 2011.[17] The FCC has organized its Broadband Action Agenda into four major categories outlined below:

1. *Promote world-leading mobile broadband infrastructure and innovation.*
   The FCC intends to take a variety of actions primarily related to unleashing more spectrum for mobile broadband and removing barriers to spectrum utilization.

2. *Accelerate universal broadband access and adoption and advance national purposes such as education and health care.*
   Perhaps the most significant FCC action within this category is to reform the USF and the intercarrier compensation system so that broadband access and adoption is accelerated. The FCC also intends to take a variety of actions designed to make broadband more accessible to low-income Americans (Lifeline and Link-Up programs), schools and libraries (E-rate program), hospitals, clinics, doctors and patients (Rural Health Care program) and disabled Americans.

3. *Foster competition and maximize consumer benefits across the broadband ecosystem.*
   The FCC intends to remove barriers to key broadband inputs (i.e., special access, wholesale obligations, tower siting, pole attachments, rights-of-way, interconnection with rural telephone companies). In addition the FCC intends to improve data collection of actual broadband speeds and the national broadband map, develop disclosure requirements for broadband service providers, and develop rules that will increase innovation in smart video devices.

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[16] *FCC National Broadband Plan; page xv.*

[17] *http://www.broadband.gov/plan/broadband-action-agenda .*

4. *Advance robust and secure public safety communications networks.*
   The FCC intends to take a series of actions intended to use broadband to help provide better and swifter responses to emergencies. In addition the FCC will take steps to protect against cyberattacks and ensure the nation's communications infrastructure is able to withstand physical failures.

FCC's Progress in Implementing the National Broadband Plan

The FCC maintains a broadband progress report intended to track the FCC's progress in completing these action items.[18] The latest progress report only tracks the FCC's progress through March 2011 and suggests the FCC has completed 83% of the action items intended to be initiated during this time period. Many of these "completed" action items are not really completed but simply represent the establishment of a proceeding such as a Notice of Inquiry, creation of a Task Force or hosting a workshop to provide public feedback and gather information about a specific issue or topic that will ultimately need to be addressed. In this regard fully addressing all issues presented in the FCC's Action Agenda will take many years to complete. Nevertheless the FCC's progress report suggests the FCC has at least initiated many proceedings designed to implement the National Broadband Plan. Some of the FCC's specific pending proceedings intended to eventually resolve various broadband-related issues are identified and briefly described in a later section of this report discussing broadband barriers.

Listed below are brief discussions of a couple of noteworthy decisions made by the FCC since releasing its National Broadband Plan:

USF and Intercarrier Compensation Reform:[19]

This FCC decision reforms both the federal universal service fund and intercarrier compensation. The FCC's USF reform measures eventually replace the existing high-cost USF support programs with the new Connect America Fund. Funding is capped at $4.5 billion but recipients will be generally required to offer broadband service with actual speeds of at least 4 Mbps downstream and 1 Mbps upstream. Funding distribution will differ based on territories served by price cap carriers[20] versus rate-of-return carriers.[21] The FCC will create the Mobility

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[18] *http://www.broadband.gov/plan/broadband-progress-report.html* .

[19] *FCC Report and Order and Further Notice of Proposed Rulemaking in Docket Nos. 10-90, 09-51, 07-135, 05-337, 01-92, 96-45, 03-109 and 10-208. FCC 11-161, released November 18, 2011 ("FCC's USF and Intercarrier Compensation Reform decision").*

[20] Price cap carriers refer to the Bell Operating Companies and other large and mid-size carriers. The FCC proposes support for price cap carriers in two phases. Phase I is intended to extend broadband service to unserved areas by freezing existing support and making available an additional $300 million in CAF funding. Phase II will use a cost model and competitive bidding process to deploy voice and broadband services to more areas.

Fund that will be distribute up to $300 million in one-time support to promote 3G and 4G networks and later up to $500 million per year in ongoing support for deploying networks for mobile voice and broadband services in areas in which service would be unavailable absent federal support. In 2013 the FCC will create a Remote Areas Fund that will allocate at least $100 million annually to the most remote areas in the country where the cost of deploying traditional terrestrial broadband networks is extremely high but affordable access might be provided through alternative technologies such as satellite and unlicensed wireless services.

Intercarrier compensation reform will ultimately eliminate intercarrier compensation. For example access rate components will be capped upon the effective date of the order and terminating intrastate access rates must be reduced to parity with corresponding interstate rates by July 2013. These terminating access rates will be further reduced to a bill-and-keep framework.[22] In the meantime the FCC intends to seek feedback on how to best transition the remaining originating and transport rate elements. Intercarrier compensation reform is not expected to be revenue neutral; however, any carrier seeking revenue recovery must first look at increasing rates to end users. Beyond raising rates for existing services the FCC will allow incumbent local telephone companies to charge a restricted monthly Access Recovery Charge (ARC).[23] Connect America Funding will be available to help minimize negative revenue impacts not recovered through the ARC.

The impact of this FCC decision on Missouri incumbent local exchange carriers (ILECs) and other companies receiving high-cost USF support may be significant but currently remains uncertain[24]. The FCC's decision needs careful evaluation and analysis whereby overall impacts may differ among companies. In general, intercarrier compensation reform may place pressure on many ILECs to raise rates for local telephone service as the FCC has established rate floors which must be met before receiving high cost support.[25] The FCC predicts that its actions will have pro-

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[21] Rate-of-return carriers are expected to retain the approximate $2 billion in annual funding through 2017; however, various high-cost support programs will be eliminated. A rate-of-return carrier's support will be phased-out over a three year period if an unsubsidized facilities-based terrestrial competitor provides voice and fixed broadband service within the area.

[22] The time frame for reaching a bill-and-keep arrangement will differ between price carriers (six years) versus rate-of-return carriers (nine years).

[23] A carrier will be unable to apply an ARC if the total monthly rate for local telephone service including various rate-related fees is at or above $30. The ARC has a maximum annual increase of $.50 for consumers and small businesses and $1.00 for multi-line businesses. The maximum ARC will be $2.50 for price cap carriers and $3 for rate-of-return carriers.

[24] The FCC estimates 9 out of 10 rate-of-return carriers will see reductions in federal USF of less than 20 percent annually, and approximately 7 out of 10 will see reductions of less than 10 percent. Almost 34 percent will see no reduction and more than 12 percent will see an increase. *FCC's USF and Intercarrier Compensation Reform decision*, released November 18, 2011. Paragraph 290.

[25] Based on data supplied by the National Exchange Carriers Association, the FCC estimates only 257,000 access lines are in areas where local rates are below the floor established for 2012 and 827,000 access lines are in areas where local rates are below the floor established for 2013. However, the FCC assumes that by 2013 carriers will have taken other

consumer, pro-innovation results, providing over $1.5 billion annually in benefits for wireless and long-distance customers. According to the FCC the benefits could take many forms, including cost savings, more robust wireless service and more innovative IP-based communications offerings, providing benefits that outweigh costs by at least three to one.[26]

Establishment of New Rules for Pole Attachments:

Federal law provides the FCC with the authority to establish pole attachment regulations unless such matters are regulated by a state.[27] The FCC has issued two decisions designed to help provide access to utility poles and reduce the cost associated with pole attachments. One FCC decision clarified the statutory right of providers to use the same space and cost-saving techniques that pole owners use, such as placing attachments on both sides of a pole.[28] This same decision also establishes that attachers have a statutory right to timely access to poles. A second FCC decision streamlined the timeline for companies to respond to a pole attachment request as well as set a new rate formula for pole attachments.[29] Specifically the new pole attachment rate formula reduces the disparity between pole attachment rates paid by telecommunications carriers versus cable providers.[30] If an electric company rejects a pole attachment request then the company must explain the reasons for rejecting and how such reasons relate to capacity, safety, reliability or engineering concerns as described in the federal statute. The FCC's decision also attempts to encourage negotiated resolution of pole attachment disputes prior to filing a complaint with the FCC.

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steps to mitigate the impacts of its reform efforts on consumers. *FCC's USF and Intercarrier Compensation Reform decision*, released November 18, 2011. Paragraph 242.

[26] *FCC's USF and Intercarrier Compensation Reform decision*, released November 18, 2011. Paragraph 14.

[27] 47 U.S.C. § 224. Only 22 states and the District of Columbia directly regulate utility-owned infrastructure. Missouri does not regulate pole attachments.

[28] Order and Further Notice of Proposed Rulemaking; WC Docket No. 07-245 *In the Matter of Implementation of Section 224 of the Act*; FCC 10-84; released May 20, 2010.

[29] FCC Order WC Docket No. 07-245 *In the Matter of Implementation of Section 224 of the Act* and GN Docket No. 09-51 *A National Broadband Plan for Our Future*. Released June 1, 2011. The rules produced from this "Pole Attachment Order" became effective June 8, 2011 except for the rules regarding the timeline and use of utility-approved independent contractors which became effective July 12, 2011 after approval by the Office of Management and Budget.

[30] Federal statutes contemplate two different methods to determine pole attachment rates whereby one method applies to pole attachments used for telecommunications service (the telecom rate formula) and a different method applies to pole attachments used for cable service (the cable rate formula). The old telecom rate formula generally resulted in higher rates (average of $20 per foot per year) than the cable rate formula (average of $7 per foot per year); however the FCC's new rate formula reduces the telecom rate formula at or near the cable rate formula.

II.   Missouri's Broadband Initiative

MoBroadbandNow

Missouri appears committed to ensuring all segments of Missouri's population are connected to high-speed data service.   That commitment goes beyond accessibility to include adoption, affordability, speed, choice and usage.[31] For example, Missouri Governor Jeremiah (Jay) Nixon established the goal of expanding broadband accessibility to at least 95% of all Missourians by the end of 2014. Depending on the source and the applicable definition of "broadband", some data suggests this goal may have already been met. MoBroadbandNow was created to assist in this effort. MoBroadbandNow is a public-private initiative of multiple cooperative partners committed to expanding broadband accessibility.

Five Objectives of MoBroadbandNow

The MoBroadbandNow Initiative is engaged in five core objectives:

   a.) Collect and verify broadband data to produce semi-annual interactive mapping information.
   b.) Establish regional teams to develop grassroots, community based strategic broadband plans.
   c.) Leverage existing and building new partnerships with broadband providers, community leaders, public and private investors and other stakeholders.
   d.) Provide technical assistance and other resources to advance broadband accessibility.
   e.) Convene annual broadband summit, report on the status of broadband infrastructure projects, assist in digital literacy and educate the public on broadband technology.

This effort originally brought $261 million in federal funding to Missouri for 19 broadband-related projects.[32] Status reports are provided by funding recipients to federal authorities; however, most of these projects are in the early stages of development. A recent report by NTIA for various congressional committees has noted Missouri's efforts to use federal funding to support various state initiatives.   Specifically this report recognized the Missouri Office of Administration's MoBroadbandNow initiative to help the regional planning commissions within Missouri assess and develop specific broadband plans for every area of the state.[33]

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[31] See www.mobroadbandnow.com .

[32] See www.mobroadbandnow.com web site for a list of these projects. It should be noted that the $249,731 awarded to Utopian Wireless to bring WiMax infrastructure in and around Benton, Missouri was terminated in July 2011 and all funding to the company has been returned.

[33]Page 8 of *Broadband Technology Opportunities Program (BTOP) Quarterly Program Status Report*; submitted by NTIA to Senate & House Appropriations Committees, Senate Committee on Science and Transportation and House Committee on Energy and Commerce, September 2011.

III. An Assessment of the Current Level of High-Speed Internet Access Service in Missouri

The percentage of Missouri's population lacking access to broadband service ranges from 1% to 13.5% depending on recent assessments. The FCC has expressed concerns regarding initial broadband availability data compiled by states through the State Broadband Data and Development program. Consequently the FCC's latest assessment has a slightly different assessment of broadband availability than the assessments contained on state broadband availability web sites and the web site containing the national broadband map. For example, the state and national broadband map web sites estimate Missouri's unserved population is as low as 1% while the FCC's estimate is 13.5%.[34] Although the FCC's assessment is based on slightly older data the remaining portion of this section will attempt to explain these assessments.

The State Broadband Data and Development (SBDD) Program

The American Recovery and Reinvestment Act of 2009 established the Broadband Technology Opportunities Program that includes the allocation of $350 million for developing and maintaining a broadband inventory map.[35] Essentially this mapping effort is intended to develop and maintain a comprehensive nationwide inventory map of existing broadband service capability and availability in the United States. The map directs the National Telecommunications and Information Administration (NTIA) to make the national broadband map available on the web and be interactive and searchable. The national broadband map relies on the broadband availability information currently being compiled by states through the SBDD program.

Missouri's Office of Administration has been awarded the grant to compile Missouri's SBDD data for the national broadband map.[36] Missouri's Office of Administration has enlisted other entities including the University of Missouri and GeoDecisions to assist with Missouri's broadband mapping efforts. Missouri's broadband availability data is provided to federal authorities for the national broadband map twice per year.[37] Missouri first published a Missouri

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[34] This percentage is reflected in one FCC report as 14%; however, this difference is presumably caused by rounding. The FCC estimates Missouri's unserved population is 801,407.   This percentage is more precisely identified as 13.5% rather than 14% based on Missouri's total population of 5,933,305 (804,407/5,933,305= 13.5%).

[35] The Act's Section 2, Division A-Appropriations Provisions, Title II, outlines the appropriations for this program while Section 6001(l) describes the basic requirements for developing the national broadband map.

[36] NTIA awarded Missouri's Office of Administration a grant to provide broadband service mapping responsibilities. This award originally was for five years; however, NTIA subsequently lowered mapping awards for all states to two years. NTIA has determined to assess lessons learned, determine best practices and investigate opportunities for improved data collection prior to obligating funding for mapping responsibilities in subsequent years. *(Federal Register/Vol. 74, No. 174/September 10, 2009, pages 46573-4.)*

[37] A state's October SBDD data submission reflects data as of June while a state's April SBDD data submission reflects data as of December.

broadband availability map in June 2010 and has subsequently posted updated maps on October 2010 and April 2011.

Broadband Availability Information on Missouri's Broadband Web Site

The state's web site, www.broadbandnow.com, has a variety of maps showing broadband availability in Missouri. This web site also provides detailed maps of the 19 regional planning areas. For example, one map shows the number of broadband providers within a regional planning area based on up to seven broadband service providers. A second map shows a detailed map of a regional planning area whereby various broadband speeds are available. A third map shows the housing unit density for a regional planning area. This web site includes an interactive provision allowing a user to plug-in a specific address and obtain information regarding available broadband service for the address.

Schedule No. 3 provides four maps displaying Missouri broadband availability as of June 30, 2011 as compiled by Missouri's SBDD mapping officials. The first map shows areas based on the number of broadband providers offering service to the area whereby the darkest areas reflect up to 14 providers. The second map simplifies this information by identifying areas with no broadband providers, 1 broadband provider and more than 1 broadband provider. Both of these maps reflect a broadband provider as serving an area based on broadband service speeds of 768 kbps download and 200 kbps upload. Such speeds may be considered by some consumers as very slow; however, NTIA has instructed all states to collect data based on such speeds. The third map shows areas where broadband service is available based on maximum advertised speeds. The fourth map attempts to simplify speed information by showing areas based on the following four speed groupings: (a) no speed data available, (b) speed is greater than or equal to 768 kbps but less than 1.5 Mbps, (c) speed is greater than or equal to 1.5 Mbps but less than 3 Mbps and (d) speed is greater than or equal to 3 Mbps.

Broadband Availability Information on the National Broadband Map Web Site

The web site www.broadbandmap.gov contains the national broadband map maintained by the NTIA in collaboration with the Federal Communications Commission. The national broadband map debuted on February 17, 2011 and is updated twice each year. The national broadband map is based on the data being collected within Missouri.[38] The web site containing the national broadband map offers flexibility of map design whereby national broadband availability maps can be generated based on a variety of factors such as: maximum advertised speeds, technology, number of providers, various demographics (i.e., density, age, income, and education), and comparison of advertised versus typical speeds, community anchor institutions, and user feedback. This website also provides access to summaries of data rather than simply maps.

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[38] The latest national broadband map reflects SBDD data as of December 31, 2010.

Both web sites suggest only a small portion of Missouri's population lacks broadband service.

Missouri's broadband web site suggests most Missourians have access to broadband. For instance, based on data as of June 2011, Missouri SBDD officials indicate less than 1 percent of Missouri households lack access to broadband service while over 97% have access to multiple broadband providers.[39]

According to the national broadband map web site, approximately 96.3% of Missourians have access to broadband speeds of at least 3 Mbps download and 768 kbps upload. Stated differently 3.7% of Missourians are considered unserved and lack access to broadband service with this minimum speed. The national map web site's selection of the 3 Mbps download and 768 kbps upload speed is the attempt to approximate the FCC's Broadband Availability Target and ignores data for the availability of slower broadband service speeds.[40] Missouri's 96.3% ranks Missouri 37th highest among all states.[41]

Considerations to Reviewing SBDD Data

SBDD data can include broadband service with relatively slow broadband speeds.

One key consideration to keep in mind is the SBDD data can include broadband service with relatively slow broadband speeds. For example all states are required to collect data from broadband providers that include broadband speeds as low as 768 kbps download and 200 kbps upload. Consequently, some of the publically available broadband availability maps simply reflect the availability of broadband service at these low speeds.[42] If the desire is to see what areas have broadband service speeds meeting or exceeding the FCC's Broadband Availability Target and the FCC's recent USF/Intercarrier Compensation requirement of 4 Mbps/1 Mbps, then care must be taken in reviewing such information.

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[39] These percentages are based on a total of 2,712,729 households in Missouri. Among this total 16,010 households lacked broadband while 47,970 households had one broadband provider and 2,648,749 households had multiple broadband providers.

[40] SBDD data is essentially grouped into the following speed tiers based on respective download and upload speeds: 200 kbps, 768 kbps, 1.5 Mbps, 3 Mbps, 6 Mbps, 10 Mbps, 25 Mbps, 50 Mbps, 100 Mbps, 1 gbps.

[41] The District of Columbia, New Jersey and Connecticut are tied for 1 with 100% while West Virginia ranks last with 74.3%.

[42] The state's www.mobroadbandnow.com web site's primary map reflecting broadband availability within Missouri is based on speeds of 768 kbps download and 200 kbps upload.

Specific Issues Raised By the FCC [43]

The FCC and the General Accountability Office have raised some specific issues with the SBDD data.[44]   The FCC claims these issues may impact the accuracy of estimating broadband deployment. Some of the issues include:

SBDD data is compiled and verified by different entities in each state. Therefore some misinterpretation of reporting instructions can be expected. One example concerns how served areas are identified for census blocks larger than two square miles. The FCC states, "It is unclear whether grantees (or broadband providers who submitted data to the grantees) relied on the threshold in the definition of 'unserved areas' in deciding whether a block is one in which broadband service is available to end users. Thus, different grantees could report a block as served if: anyone in that block is served; only everyone in that block is served; the fraction of unserved is below 90% as specified in the definition of 'unserved areas;' or something else."[45]

Non-reporting and misreporting of data may affect estimates. The submission of SBDD data is voluntary; however, the FCC notes unserved areas may be overstated if providers did not submit data or submitted incomplete data. A review of SBDD data in Missouri indicates several providers have failed to report data and have issues with the non-disclosure agreement.[46] Likewise some providers may have over-reported where they have deployed broadband service. For example Missouri officials note, "…Some wireless providers defined their area of availability as their wireless coverage area…."[47] without clarification as to the amount of coverage available. "Served areas" may not accurately represent the number of served households because SBDD data simply measures broadband availability by census block. Thus, SBDD data can indicate broadband service is available in a census block even though broadband service may be unavailable at some residences within the census block. In addition SBDD data assumes broadband service is available

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[43] Unless otherwise noted these limitations are identified on pages 74-78 within the Technical Appendix of the FCC's Seventh Broadband Progress Report and Order on Reconsideration ("FCC's Seventh Broadband Progress Report") for GN Docket No. 10-159 *In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*; released May 20, 2011.

[44] See also General Accountability Office's *Current Broadband Measures Have Limitations, and New Measures are Promising But Need Improvement*, GAO-10-49; October 2009.

[45] Footnote 26 within the FCC's Technical Appendix of the FCC's Seventh Broadband Progress report.

[46] Missouri's October 1, 2011 submission to NTIA Data Collection and Processing Missouri Broadband Data Development. Pages 17-20 identify broadband providers who have submitted data as well as providers that have not submitted data for a variety of reasons (i.e., working toward signed nondisclosure agreement, non-responsive, refused to participate). For the record two providers recently awarded grants for broadband projects in Missouri have yet to submit data.

[47] Missouri's Data Collection and Processing report submitted to NTIA on October 1, 2011, page 4.

to both business customers and residential customers even though a provider's broadband service might be limited to solely business or residential customers.

SBDD data may not accurately represent a consumers' actual broadband speed because SBDD data is collected based on a provider's maximum advertised broadband speed.

SBDD data is collected by pre-determined speed tiers none of which match the FCC's target of 4 Mbps/1 Mbps.[48] The FCC assumes the target is met if the broadband service has broadband speeds of at least 3 Mbps/768 kbps. Therefore, estimates of meeting the FCC's Broadband Availability Target only approximates whether an area has broadband service meeting this target speed.

SBDD data may not accurately reflect where wireless subscribers may actually obtain broadband service that meets the FCC's target speeds.[49] The FCC's concern primarily rests with the type of technologies used by wireless carriers at the time SBDD data was initially collected. Specifically data reported by many wireless carriers reflects speeds that users can only rarely obtain under very good conditions.   The FCC is so concerned about this issue that it excluded wireless data from any conclusions reached in its latest broadband progress report.

FCC Reports on Broadband Availability

The FCC released three reports this past year concerning broadband availability. For example, Section 706 of the Telecommunications Act requires the FCC to conduct an annual inquiry concerning the availability of advanced telecommunications capability. This directive results in the FCC providing to Congress an annual Broadband Progress Report.[50] Likewise the 2008 Farm Bill required the FCC and the Secretary of Agriculture to submit a report to Congress describing a comprehensive rural broadband strategy in 2009 with a subsequent update in 2011.[51] Both reports primarily rely on the same SBDD data and produce complimentary results; however,

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[48] Paragraph No. 25 of the FCC's Seventh Broadband Progress report. SBDD data organizes broadband availability based on nine tiers of advertised download speeds and 11 tiers of upload speeds where the break points for reporting advertised broadband speeds are 200 kbps, 768 kbps, 1.5 Mbps, 3 Mbps, 6 Mbps, 10 Mbps, 25 Mbps, 50 Mbps, 100 Mbps and 1 gigabit per second.

[49] Paragraph No. 26 of the FCC's Seventh Broadband Progress report.

[50] The latest report is the Seventh Broadband Progress Report and Order on Reconsideration, GN Docket No. 10-159, *In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act.* FCC 11-78. Released May 20, 2011.

[51] Bringing Broadband to Rural America: Update to Report on a Rural Broadband Strategy, GN Docket No. 11-16. Released June 17, 2011. See also, First Rural Broadband Report released May 22, 2009.

the Broadband Progress Report also references another data source known as Form 477 data. A third FCC report is released annually and solely pertains to Form 477 data.[52]

Differences Between Form 477 data versus SBDD data

The main differences between SBDD data and Form 477 data concerns the type of broadband data collected and the granularity of the data.[53] For example SBDD data identifies areas where broadband service is readily available while Form 477 data provides broadband subscriber quantities. SBDD data is provided by census blocks which represent much smaller geographic area than Form 477 data which is generally tabulated based on census tracts.[54] Form 477 data is somewhat limited in the ability to identify unserved areas because wireless carriers simply provide broadband subscriber quantities on a state-wide basis. The FCC admits Form 477 data suffers from some of the same limitations as SBDD data and the FCC is considering improvements to the collection of Form 477 data.[55] Nevertheless the FCC continues to gather and analyze Form 477 data to primarily maintain some consistency with past reports; however, the FCC simultaneously analyzes both SBDD and Form 477 data in the annual Broadband Progress Report.

FCC Findings on Broadband Availability

The FCC's latest analysis of SBDD and Form 477 data produces slightly different results in the identification of unserved areas. In brief, the table below identifies the unserved population quantities (percentages) of each data source as concluded by the FCC:

Unserved "Fixed" Broadband Population & Households*		
United States Population/Households Lacking Access to Broadband (at speeds at least 3 Mbps/768 kbps)		
	SBDD Data[56]	**Form 477 Data**[57]
Unserved Population	26,160,339	23,925,637
Percent Unserved of Total	8.4%	7.7%
Unserved Households	9,210,439	8,922,666

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[52] The FCC's most recent report is Internet Access Services: Status as of December 31, 2010. FCC Industry Analysis and Technology Division Wireline Competition Bureau; released October 2011.

[53] The Technical Appendix in the FCC's Seventh Broadband Progress Report provides detailed comparisons of SBDD data and Form 477 data.

[54] Missouri has 343,565 census blocks and 1,393 census tracts.

[55] FCC's Notice of Proposed Rulemaking for WC Docket No. 11-10 *In the Matter of Modernizing the FCC Form 477 Data Program*, FCC 11-14 released February 8, 2011.

[56] Appendix B, page 44 as well as Tables 10 and 11 within Appendix F on page 83 of the FCC's Seventh Broadband Progress Report.

[57] Appendix D, page 48 as well as Tables 10 and 11 within Appendix F on page 83 of the FCC's Seventh Broadband Progress Report.

Percent of Unserved Households	8.0%	7.8%

* lacking access to broadband service with speeds of at least 3 Mbps/768 kbps.

The FCC's analysis of SBDD data concludes 26,160,338 Americans or 8.4% of the population lack access to broadband services meeting the FCC's Broadband Availability Target and therefore should be considered "unserved".[58] As previously discussed the FCC has concerns about whether the data accurately reflect where wireless subscribers are able to obtain service that meets such speeds and consequently the FCC has intentionally ignored data submitted by wireless providers. The exclusion of wireless data obviously has a significant impact on results.[59] Despite this exclusion, the FCC concludes most of the unserved population live in areas where there is no business case to offer broadband service and no immediate prospect of being served. Therefore the FCC is maintaining a basic conclusion that broadband is not being deployed in a reasonable and timely fashion to all Americans.[60]

The FCC analysis of Form 477 data concludes 23,925,637 Americans or 7.7% of the population lack access to broadband services meeting the FCC's target speeds. The FCC identifies unserved areas using Form 477 data by applying a subscriber threshold that essentially compares a census tract's number of fixed broadband subscribers to the census tract's total population. The FCC assumes a census tract is unserved if the resulting percentage is less than 1%. The FCC acknowledges this threshold is low and could be set at higher levels but the FCC has opted to be conservative in its estimate of unserved areas.[61]

Missouri May Lag in Broadband Availability Especially in Rural Areas

The FCC's latest reports suggest Missouri lags in broadband availability. For example Missouri's unserved percentages are higher than the previously identified percentages for the United States. For instance FCC reports indicate the percentage of Missouri's population lacking access to broadband service with at least speeds of 3 Mbps/768 kbps ranges from 11% to 13.5% depending on reliance of SBDD or Form 477 data. In comparison the corresponding percentages for the United States range from 7.7% to 8.4%.

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[58] These figures are based on broadband availability of speeds of at least 3 Mbps/768 kbps. *If the FCC had selected the next tier of SBDD broadband data (a minimum speed of 6 Mbps/1.5 Mbps) then the total number of unserved Americans increases from 26.2 million to 62.3 million.*

[59] FCC's Seventh Broadband Report. The 26,160,338 unserved Americans translate into 9,210,439 households. The FCC notes that if SBDD wireless data is included then there would be 14 million Americans in 5 million households with unserved broadband availability.

[60] This conclusion is found in Paragraph No. 1 of the FCC's Seventh Broadband Report.

[61] For example if the FCC applies a 5% subscribership threshold to identify unserved census tracts then the number of unserved Americans increases to 51,000,000. A 25% subscriber threshold results in 145,300,000 unserved Americans.

Missouri's Unserved "Fixed" Broadband Population & Households*		
	SBDD Data[62]	**Form 477 Data[63]**
Unserved Population	801,407	664,764
Percent Unserved of Total	13.5%	11%
Unserved Households	288,751	258,570
Percent of Unserved Households[64]	11%	10%

* lacking access to broadband service with speeds of at least 3 Mbps/768 kbps.

The sheer number of 801,407 unserved Missourians ranks 6th highest among all states.[65] In terms of the percentage of unserved to total population, Missouri has a higher percentage at 13.5% versus the overall United States percentage of 8.4%. Missouri's 13.5% ranks Missouri as having the 16th highest unserved/total population percentage among the fifty states as reflected in Schedule No. 4.[66]

According to the FCC's analysis Missouri's rural areas may lag in broadband capability.[67] Listed below are comparisons of fixed broadband availability in rural versus urban areas:[68]

Fixed Broadband Availability in <u>United States</u> (SBDD data as of June 2010)					
(a) **Area**	**(b)** **Population**		**(c)** **Unserved Population**		**(c) /(b)**
Rural	67,224,943	22%	18,974,285	72.5%	28.2%
Urban	243,181,422	78%	7,186,053	27.5%	2.9%
Total	310,406,365	100%	26,160,338	100%	8.4%

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[62] Appendix B, page 43, of the FCC's Seventh Broadband Progress Report.

[63] Appendix D, page 47, of the FCC's Seventh Broadband Progress Report.

[64] Missouri's total number of households is 2,712,729 according to Missouri SBDD officials.

[65] States with higher unserved populations than Missouri are: California (3,896,443), Indiana (1,814,495), Texas (1,214,025), Kentucky (1,176,170), and Florida (962,513).

[66] Wyoming has the highest unserved percentage at 46.5% while New Jersey and Rhode Island tied with the lowest unserved percentage at .4%.

[67] The US Census defines urban but not rural areas; therefore by default rural areas are areas not defined as an urban area or urban cluster. An urban area is defined as a census block groups or blocks that have a population density of at least 1,000 people per square mile. An urban cluster is defined as surrounding census blocks that have an overall density of at least 500 people per square mile as designated from the 2000 Census.

[68] The data within these two tables can be found within Table 1, page 7 and Appendix B, pages 22-24, of the Update to the 2009 Rural Broadband Report.

Fixed Broadband Availability in <u>Missouri</u> (SBDD data as of June 2010)					
(a) **Area**	**(b)** **Population**		**(c)** **Unserved Population**		**(c) /(b)**
Rural	1,873,343	32%	751,211	93.7%	40.1%
Urban	4,059,962	68%	50,196	6.3%	1.3%
Total	5,933,305	100%	801,407	100%	13.5%

This information confirms an unsurprising observation that the vast majority of unserved population resides in rural areas. For instance the percentage of the total unserved population residing in rural areas is 72.5% for the United States and 93.7% for Missouri. Missouri's higher percentage might be expected given Missouri has a higher percentage of its total population residing in rural areas.

The suggestion Missouri may lag in broadband availability within rural areas involves a more detailed analysis of these figures. Missouri has a higher percentage of total rural population classified as unserved at 40.1% compared to the United States percentage of 28.2%. In comparison with other states, Missouri's 40.1% reflects the 14th highest percentage among the 50 states as shown in Schedule No. 5.[69] All of this information suggests the prospect of not having available broadband service is greater for a rural Missouri consumer versus the typical rural U.S. consumer.[70]

Conversely, a consumer residing in a Missouri urban area may be slightly more likely to have broadband service than the typical consumer residing in an urban area within the United States. This suggestion is based on comparing the percentage of urban unserved population to total urban population. Missouri has a slightly lower percentage.   For example Missouri's percentage of unserved urban population to total urban population is 1.3% versus 2.9% for the United States.

The Quantity of Broadband Connections in Missouri is Typical but Growing Faster than the U.S. Average

Missouri's broadband connections total 3,148,000.[71] Sixteen other states have a higher number of broadband connections whereby the total number of broadband connections in other states range from 21,498,000 connections in California to 263,000 connections in Wyoming.

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[69] The range among all states for the percentage of unserved rural population to total rural population 67.3% (Wyoming) to .4% (New Jersey and Rhode Island).

[70] The map shown on page 4 of Schedule No. 3 shows the unserved areas lacking access to broadband at speeds meeting or exceeding the FCC's broadband target speed. Such areas are the white-colored areas of Missouri.

[71] *Internet Access Services: Status as of December 31, 2010*; FCC's Industry Analysis and Technology Division of Wireline Competition Bureau; Table 17, page 37; released October 2011. These broadband connections reflect connections over 200 kbps in at least one direction. This quantity can be further broken down into connections totaling 2,560,000 for residential customers and 588,000 for business customers. Data is based on quantities as of December 31, 2010.

Schedule No. 6 lists broadband connections for all states. Missouri's broadband connection quantity appears to be a typical quantity based on population. For example, the percentage of broadband connections to total population is nearly equal for Missouri at 53% versus 54% for the United States. The ratios for other states range from 43% to 65%.[72] Missouri's 53% ratio results in a ranking of 23rd highest among states as shown in Schedule No. 7.[73] In this regard, Missouri's total number of broadband connections is relatively average in comparison with other states.

Broadband connections appear to be increasing at a faster rate in Missouri versus other states. A comparison of the FCC's last two reports reflecting Form 477 data as of December 31, 2009 and December 31, 2010, respectively, shows total broadband connections are increasing. The United States reported total broadband connections of 133,147,000 in 2009 versus 168,880,000 in 2010 for an overall increase of 27%. Missouri's broadband connections totaled 2,326,000 in 2009 versus 3,148,000 for 2010 for an overall increase of 35%. Such information suggests Missouri's broadband connections are increasing faster than at the national level; however, these connections represent broadband speeds as low as 200 kbps.

Analyzing broadband connections that meet or exceed the FCC's Broadband Availability Target suggest Missouri lags the United States but may be catching up. Broadband connections that have at least 3 Mbps download speed and 768 kbps upload speed comprise approximately 32% of total U.S. broadband connections for 2009 and 33% for 2010. In comparison, Missouri's percentage of broadband connections meeting or exceeding the FCC's target speed was 18% in 2009 and 24% in 2010. In this regard the percentage of connections meeting/exceeding the FCC's target speed appears to be increasing faster than the national average. This information is shown below:

Broadband Connections
(Form 477 Data)

United States			
	2009	**2010**	**% Change**
At least 3 Mbps/768 kbps[74]	42,182,000 *(32% of total)*	55,749,000 *(33% of total)*	32%
Total Connections[75]	133,147,000	168,880,000	27%

Missouri			

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[72] Alaska tops the list with 65% while West Virginia ranks last with 43%.

[73] Missouri is tied with Minnesota and Georgia who also had 53% ratios.

[74] Broadband connections meeting this speed threshold for the U.S. and Missouri are from Table 19 for two respective FCC reports entitled *Internet Access Services Report Status as of December 31, 2010 and December 31, 2009*.

[75] Broadband connection quantities above 200 kbps for the U.S. and Missouri are from Table 18 for two respective FCC reports entitled *Internet Access Services Report Status as of December 31, 2010 and December 31, 2009*.

	2009	**2010**	**% Change**
At least 3 Mbps/768 kbps	429,000 *(18% of total)*	757,000 *(24% of total)*	76%
Total Connections	2,326,000	3,148,000	35%

Types of Broadband Connections Used in Missouri

Broadband connection technologies found in Missouri are similar to the mix of connections found throughout the United States. In analyzing total broadband connections approximately half are using mobile wireless technology (50% United States versus 51% in Missouri). The remaining connections are using DSL, cable and fiber technologies. DSL connections to total connections are higher in Missouri at 27% versus the national average of 19%.   Cable connections to total connections are lower in Missouri at 19% versus 27% in the United States. Nevertheless, cable technology accounts for at least half of all connections with broadband speeds at least 3 Mbps/768 kbps. This information is summarized below:

Broadband Connections Based on Type of Technology[76]

Technology	Total Connections		Connections at least 3 Mbps/768 kbps	
	United States	**Missouri**	**United States**	**Missouri**
ADSL	19%	27%	13%	16%
Cable	27%	19%	58%	50%
Fiber	3%	-	8%	.5%
Mobile Wireless	50%	51%	20%	33%
Other**	1%	-	-	.5%
Total	100%	97%*	99%*	100%

* Does not reflect 100% due to rounding and/or data withheld to maintain confidentiality.

**Other includes technologies such as satellite and broadband over power lines.

International Comparisons of Broadband Capability are Mixed

The Broadband Data Improvement Act requires the FCC to conduct an annual progress report essentially comparing the United States' broadband capabilities with other countries.[77] International rankings of broadband capability and broadband prices are based on data currently primarily provided through the Organization for Economic Co-operation and Development (OECD). The FCC claims ranking broadband capabilities of countries remains suspect because

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[76] The underlying numbers for these percentages are drawn from Tables 18 and 19 of the FCC's report *Internet Access Services: Status as of December 31, 2010*; released October 2011.

[77]The FCC's most recent report was released May 20, 2011.   Second Report, IB Docket No. 10-171, *In the Matter of International Comparison Requirements Pursuant to the Broadband Data Improvement Act. International Broadband Data Report.* This report is mandated by 47 U.S.C. § 1303(b).

international broadband data is either incomplete or based on variations in data collection methods. Moreover, reliance on advertised speeds significantly overstates broadband performance in a large number of foreign countries relative to the United States. Nevertheless, according to OECD data, the United States ranks ninth among countries for mobile broadband adoption on a per capita basis and 12th for fixed broadband on a per household basis.[78] South Korea ranks the highest among all countries for both measures.[79] OECD broadband pricing data ranks the United States in the "middle of the pack" among OECD countries in terms of median monthly broadband prices; however, the FCC notes a ranking of broadband prices for 2009 by the International Telecommunication Union places the United States among the least expensive countries for fixed broadband services.

IV.   An Identification of Unserved and Underserved Areas

This section attempts to identify unserved and underserved areas within Missouri. The Senate Committee's definitions for "unserved" and "underserved" are reviewed. SBDD maps are explained and discussed, attempting to identify such areas. The FCC's analysis of underserved areas will also be discussed whereby the FCC identifies 23 Missouri counties as "underserved" in the sense such counties lack access to broadband service meeting the FCC's target threshold speeds. Comparing SBDD maps and the FCC's analysis produces mixed results because some counties flagged by the FCC as underserved have high percentages of broadband availability according to SBDD data. Nevertheless, FCC and SBDD data may agree the following nine Missouri counties might be considered underserved or at least have a lower percentage of broadband availability than most other Missouri counties: Bollinger, Douglas, Harrison, Oregon, Ozark, Reynolds, Schuyler, Shannon, and Washington.

Defining "unserved" and "underserved"

The Senate Committee provides definitions for "unserved" and "underserved." The Senate Committee's definition for "unserved" is an area where a consumer's only access to internet service is through a dial-up connection. The Senate Committee's criteria for classifying an "underserved" area is where a consumer's only access to high-speed internet service is at a speed less than three megabits per second. Requirements for the SBDD program also define these terms; however, the criterion for classifying an area as unserved or underserved differs from the Senate Committee's definitions.[80] The FCC's sole focus appears to be on areas failing to have broadband service

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[78] FCC Second Report; IB Docket No. 10-171; *In the Matter of International Comparison Requirements Pursuant to the Broadband Data Improvement Act, International Broadband Data Report*; released May 20, 2011.

[79] Other countries ranking ahead of the United States for both measures include Sweden, Norway, and Denmark.

[80] Federal Register/Vol. 74, No. 129, page 32549. SBDD requirements define "unserved" as an area where at least 90% of households lack access to facilities-based terrestrial broadband of at least 768 kbps downstream and 200 kbps upstream. "Underserved" is defined if any one of the following three factors are present: (a) No more than 50% of households have access to broadband service at 768 kbps/200 kbps; (b) No provider advertises broadband service at speeds of at least 3 Mbps or greater; or (c) broadband subscribership for the area is 40% or less.

available at the FCC's broadband availability target of 4 Mbps/1 Mbps; however, the FCC labels such areas as "unserved". Nevertheless, for purposes of this report, unserved will be areas lacking the availability of broadband service meeting the SBDD minimum speeds of 768 kbps download and 200 kbps upload. Underserved will be areas lacking availability of broadband service meeting the FCC's broadband availability target of 4 Mbps/1 Mbps. These targets actually set a higher bar to meet the definitions than those expected by the Senate Committee.

Missouri's "Unserved" Areas

SBDD data identifies unserved Missouri areas at the census block level. Unserved Missouri areas are identified on two maps within Schedule No. 3; specifically pages 1 and 2 of this schedule. Page 1 of Schedule No. 3 identifies unserved areas within Missouri via white-colored areas. This map also has varying shades of blue-colored areas indicating the availability of broadband service based on the number of providers. This same information is simplified on page 2 of Schedule No. 3 whereby unserved areas in Missouri are identified in red-colored areas while yellow-colored areas represent census blocks with only one broadband service provider and blue-colored areas reflect multiple providers. In brief, Missouri SBDD officials state, "Extremely rural areas of the state, such as the Ozark Foothills, are the primary locations for lower concentrations of broadband service."

SBDD data indicates all Missouri counties have broadband service available at 768 kbps download/ 200 kbps upload.[81] Schedule No. 8 was prepared by Missouri's SBDD officials and ranks Missouri's 115 counties based on the percentage of a county's unserved households to total households. Only six counties have a percentage greater than 10%, which means more than 10% of the county's households lack broadband service at the identified speeds.[82] Conversely this schedule identifies 51 Missouri counties in which every household within the county has broadband availability.

Missouri's "Underserved" Areas

The FCC provides two estimates of Missouri's underserved areas based on reviewing SBDD data and Form 477 data. FCC analysis of SBDD data suggests 801,407 Missourians within 37,137 census blocks lack access to fixed broadband service at speeds meeting or exceeding the FCC's broadband availability target.[83] FCC analysis of Form 477 data suggests 664,764 Missourians residing in 176 census tracts lack access to fixed broadband service at speeds meeting

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[81] An important consideration is SBDD data will assume the entire area within a census block is served even though a provider's broadband service is only available to a portion of the households within a census block.

[82] The six Missouri counties and their percentage of households with no broadband availability are: Wayne (39.8%), Bollinger (35.3%), Reynolds (15.7%), Oregon (14.3%), Madison (13.7%), and Ripley (11.4%). These results reflect SBDD data as of June 2011.

[83] Appendix B, page 43, FCC's Seventh Broadband Progress Report. Results are based on SBDD data as of June 2010.

or exceeding the FCC's broadband availability target.[84]   In terms of specifically identifying underserved areas, the FCC has only provided such information through Form 477 data by aggregating census tract information into county data.   The FCC identifies the following 23 Missouri counties as being underserved: Bollinger, Caldwell, Cooper, Douglas, Dunklin, Gasconade, Grundy, Harrison, Howard, Knox, McDonald, Mercer, Oregon, Ozark, Pemiscot, Putnam, Reynolds, Schuyler, Shannon, Shelby, Stoddard, Vernon and Washington.[85]   As previously discussed, the FCC's analysis excludes wireless broadband data due to concerns regarding the data.

Missouri SBDD officials have compiled two maps identifying underserved areas in Missouri. Both maps are contained on pages 3 and 4 of Schedule No. 3. Underserved areas might be more easily distinguished on the map on page 4 of Schedule No. 3. On this map served areas are colored in blue while underserved areas are colored in white, red, and yellow depending on the maximum advertised speed for an area. The map on page 3 of Schedule No. 3 also identifies underserved areas by the areas colored in white and two very light shades of orange. This map is slightly more difficult to readily distinguish underserved areas because many other darker shades of orange are represented on the map indicating the availability of even higher broadband speeds.

An attempt was made to try and replicate the FCC's analysis using more updated SBDD data.[86] The web site containing the national broadband map provides some flexibility in sorting a state's broadband data; however, the web site has some limitations. For instance the web site allows data to be sorted based on type of technology and broadband speed but not both.[87] SBDD data sorted on the national broadband web site to show the availability of broadband service exceeding 3 Mbps/768 kbps results in:

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[84] Appendix D, page 47, FCC's Seventh Broadband Progress Report. Results are based on Form 477 data as of June 2010.

[85] Appendix E of the FCC's Seventh Broadband Progress Report.

[86] Missouri's SBDD officials did not respond to requests to identify the percentage of the population for each Missouri county with access to broadband service meeting or exceeding the FCC's target speed based on: (1) All technologies. (2) Solely wireline technology.

[87] The web site does not allow a user to readily sort SBDD data to show the availability of wireline broadband technology exceeding 3 Mbps/768 kbps. For example if SBDD data is sorted by broadband availability exceeding 3 Mbps/768 kbps then the data will include all types of technology. Conversely if SBDD data is sorted to only analyze wireline technology availability then the SBDD data will include all broadband speeds.

Missouri Counties with Access to Broadband with at Least 3 Mbps/768 kbps[88] (Wireline and Wireless technologies)	
Percentage of County's Population	**Number of Missouri Counties**
90% or more	73
80% to 89.9%	16
70% to 79.9%	11
60% to 69.9%	4
Less than 60%	11
Total	115
The 11 Missouri counties with the lowest percentage of the county's population with access to broadband service at or exceeding this speed) are: **Shannon (59.8%)**, Nodaway (59.4%), Worth (58.5%), Ralls (58.5%), Carter (57.9%), Randolph (57.4%), **Washington (55.8%)**, **Oregon (51.2%)**, **Harrison (50.1%)**, Osage (38.6%) and **Reynolds (15.4%)**. **Bolded** counties are also labeled by the FCC as underserved.	

SBDD data sorted on the national broadband web site to show the availability of wireline broadband service results in:

Missouri Counties with Access to <u>Wireline</u> Broadband Service[89] (Broadband Speeds 768 kbps/200 kbps and above)	
Percentage of County's Population	**Number of Missouri Counties**
90% or more	27
80% to 89.9%	47
70% to 79.9%	19
60% to 69.9%	12
Less than 60%	**10**
Total	115
The 10 Missouri counties with the lowest percentages (% of county's population with wireline broadband access) are: **Oregon (57.7%)**, Ste. Genevieve (55.5%), **Schuyler (54%)**, Dade (52.9%), **Douglas (49.4%)**, Wayne (45.9%), Ripley (38.4%), **Ozark (37.2%)**, Osage (30.8%), and **Bollinger (25.5%)**. **Bolded** counties are also labeled by the FCC as underserved.	

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[88]www.broadbandmap.gov . Choose "Analyze the Data" then "Rank". Under the heading "Select Geography" select "County" within the category entitled "Rank within a State" followed by selecting "Missouri" under the pop-up "Select a State". Under the heading "Select a Metric" simply choose "Speed". (The default speed is DL > 3 mbps and UL >768 kbps.) Select "Generate List". The resulting list ranks Missouri's 115 counties by identifying the percentage of each county's population with access to broadband service meeting this speed threshold. These results reflect SBDD data as of 12/31/10.

[89] This information can be obtained by using the same process previously described for the web site www.broadbandmap.gov; however, within the "Select a Metric" category choose "Technology" and then select "Wireline Technology" in the pop-up menu followed by "Generate the List". The resulting list ranks Missouri's 115 counties by identifying the percentage of each county's population with access to wireline broadband service; however, this list is based on broadband speeds of 200 kbps and above. This information is based on SBDD data as of 12/31/10.

Sorting SBDD data these two ways produces mixed results. For example several Missouri counties labeled by the FCC as underserved have relatively high percentages of a county's population with access to broadband service.[90]

V. A Brief Assessment of Broadband Service Rates in Missouri

Broadband service rates can be difficult to evaluate and compare between companies. For example, most wireline broadband service providers offer a variety of broadband service plans whereby higher rates are associated with higher broadband speeds. The speeds associated with broadband service plans can vary between companies thus complicating broadband service rate comparisons. In addition, broadband service rates can vary based on locations.   Rate analysis is further complicated by service bundling whereby a consumer can obtain a better overall rate by bundling broadband service with other services such as video service and/or voice service. Likewise promotional offerings can further complicate rate assessments. Wireless broadband rates are also difficult to compare. Most wireless plans do not reflect an advertised broadband speed and most wireless companies have data plans based on data usage. Additional fees apply if the amount of data exceeds a plan's usage cap.

On a practical basis, obtaining a company's advertised rate for solely broadband service is not easy because a company's web site may not readily list or identify the company's broadband service rates. Typically a company requires a web site user to plug-in specific address information in order to first obtain broadband availability information and if available, additional information is provided that may or may not include revealing rates for broadband service. Verbally contacting a company's service representative to obtain a company's broadband service rate information can also be challenging. Some service representatives will not readily provide rate information unless you are actually signing up for service.   Alternatively, if a company's service representative provides broadband service rate quotes they might clarify the rates are only available for a limited time.

Despite these complications the table below attempts to list the least and most expensive monthly rates offered by a sampling of companies for broadband service on a standalone or a la carte basis. For some companies different rates are available if broadband service is bundled with other services. The table also lists the maximum download speed associated with a particular plan. Among the wireline companies listed in the table below the least expensive monthly plan is $14.95; however, the plan only offers a speed up to 768 kbps. The most expensive wireline broadband plan is $199.95 with advertised broadband speeds up to 105 Mbps. Wireless company broadband rates

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[90] Sorting more recent SBDD wireline and wireless data based on access to broadband service with at least 3 Mbps speed results in 14 of the FCC's underserved counties with percentages higher than 95%. Sorting SBDD data based solely on wireline data has 5 of the FCC's underserved counties with broadband availability percentages greater than 90%.

have data allowances whereby additional fees apply if usage exceeds a designated level per month. Among the three wireless companies listed below the least expensive wireless plan is $10 per month with a 75 MB data allowance. The most expensive wireless plan is $100 per month with a 12 GB data allowance.

Broadband Service Plans in Missouri			
Company	**Least Expensive**	**Most Expensive**	**Comments**
Charter	$24.99 (up to 3 Mbps/384 kbps)	$84.99 (up to 100 Mbps/5 Mbps)	Additional charges apply such as $7/month modem rental charge; $9.99/month wireless home networking charge.
Time Warner	$29.95 (768 kbps/128 kbps)	$99.95 (up to 50 Mbps/5 Mbps)	
Comcast	$29.99 (up to 15 Mbps)	$199.95 (up to 105 Mbps)	
Mediacom	$19.95 (up to 3 Mbps) *($27.95 after 12 months; $42.95 after 24 months)*	$49.95 (up to 20 Mbps) *($54.95 after 12 months; $74.00 after 24 months)*	Requires 2 year agreement. Initial rate valid for 12 months. Rate increases after 12 & 24 months. *(A 50 Mbps service is available in very limited areas.)*
Northeast MO Rural	$29.95 (up to 1.5 Mbps)	$39.95 (up to 3 Mbps)	
AT&T	$19.95 (up to 3 Mbps)	$49.95 (up to 24 Mbps)	
CenturyLink	$14.95 (up to 768 kbps)	$29.95 (up to 10 Mbps)	
WindStream	$39.99** (up to 3 Mbps)	$49.99** (up to 12 Mbps)	Rates include voice service (a limited local measured service component as found in Section 25.7 of company's tariff.)
AT&T Wireless	$15.00 (250 MB data allowance)	$45.00 (5 GB data allowance)	Speed not advertised.
Verizon Wireless	$10.00 (75 MB data allowance)	$80.00 (10 GB data allowance)	Speed not advertised.
Sprint Wireless	$34.99 (up to 3.1 Mbps) (3 GB data allowance)	$79.99 (up to 12 Mbps) (12 GB data allowance)	

VI.   <u>An Assessment of Advertised versus Actual Broadband Speeds</u>

This section analyzes advertised versus actual broadband speeds. Initial studies cited by the FCC's National Broadband Report indicated a broad gap between advertised and actual speeds whereby the actual broadband speed delivered by a company is usually half of the company's advertised speed. A more recent and comprehensive study conducted by the FCC suggests the gap

between advertised and actual broadband speeds is closing for wireline broadband service. The FCC is in the process of conducting a similar analysis of advertised versus actual broadband speeds of wireless broadband service; however, to date this study has not been initiated.

Broadband Speed Considerations

The broadband speed experienced by a broadband subscriber can be impacted by a variety of factors. Network congestion, subscriber's equipment (including the consumer's own computer and home WiFi routers), the performance of the search engine or web site the consumer is accessing can all impact the broadband speed experienced by the broadband subscriber. Network congestion can cause broadband speeds to be "bursty" whereby the broadband speed can significantly vary at different times for the same subscriber.

Most companies usually advertise the download speed and do not reflect the lower upload speed. In addition most broadband service providers do not guarantee advertised speeds, but rather describe the advertised speed as an "up to" speed that can be impacted by various factors. Many providers offer broadband service in service tiers whereby a broadband provider typically charges a higher monthly rate for faster broadband speeds.[91] Advertised broadband speeds have been higher for cable versus DSL.[92]

Initial Studies: Actual Broadband Speed was 50% of Advertised Speed

Early initial studies of advertised versus actual broadband speeds suggested actual speeds experienced by U.S. consumers lagged advertised speeds by approximately 50%.[93] The FCC's National Broadband Plan specifically indicates the average advertised "up to" download speed is 8.0 Mbps yet the average actual download speed experienced is 4.1 Mbps.[94] The FCC notes the gap between advertised and actual speeds is "...consistent and prevalent across all types of connection technologies." The FCC appears to be consistently focused on "actual" broadband speeds rather than "advertised" speeds. For example, as part of the its recent universal service fund and intercarrier compensation reform decision, the FCC intends to require universal service

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[91] For instance Windstream offers broadband speeds of 3 Mbps, 6 Mbps and 12 Mbps (see www.windstream.com) . CenturyLink offers broadband speeds of 1.5 Mbps, 7 Mbps, 25 Mbps and 40 Mbps (see www.centurylink.com).

[92] FCC's National Broadband Plan, page 43, Exhibit 4-H shows the mean advertised broadband speeds for cable and DSL from 2004 through 2009.

[93] FCC's OBI Technical Paper No. 4 "Broadband Performance" released August 2009; page 12. Additional studies suggesting actual broadband speeds significantly lag advertised broadband speeds have been found in studies of broadband speeds conducted in other countries (i.e., United Kingdom, New Zealand, Australia, Italy and Ireland as noted on pages 21-22 of the FCC's National Broadband Plan).

[94] FCC's National Broadband Plan; Exhibit 3-G on page 21.

funding recipients to offer service at "actual" broadband speeds that are reasonably comparable to services offered in urban areas.[95]

A More Recent Study Suggests Actual Speeds are Substantially Closer to Advertised Speed

A more recent and broader FCC study concludes actual broadband speeds are substantially closer to advertised speeds.[96] This more recent FCC study marks the first nationwide broadband performance study of residential wireline broadband service. In March 2011 the FCC measured the broadband speeds of 7,500 broadband subscribers of the 13 largest wireline broadband providers in the country.[97] Listed below is a summary of the study's nationwide results based on a technology's sustained speed during peak periods:

Percentage of Actual/Advertised Broadband Speed			
	DSL	**Cable**	**Fiber-to-the-Home**
Download Speeds	82%	93%	114%
Upload Speeds	95%	108%	112%

These results suggest the gap is closing between advertised and actual broadband speeds for wireline carriers. Also noteworthy is that in some instances actual broadband speed exceeds the company's advertised speed.

The FCC's latest wireline study noted that mobile broadband services were not included in the study because of "…special challenges inherent in measuring the actual performance of mobile networks…." Nevertheless the FCC appears to be currently researching how best to measure mobile broadband performance. For instance the FCC is seeking comment on whether and how to pursue a similar measurement program for mobile broadband services.[98]

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[95] FCC Report and Order and Further Notice of Proposed Rulemaking in Docket Nos. 10-90, 09-51, 07-135, 05-337, 01-92, 96-45, 03-109 and 10-208. October 27, 2011. Paragraph 91.

[96] "Measuring Broadband America. A Report on Consumer Wireline Broadband Performance in the U.S." issued by the FCC's Office of Engineering and Technology and Consumer and Governmental Affairs Bureau. August 2011. Link to Measuring Broadband America report

[97] Test results were taken from 7,500 households but results were analyzed for 6,800 homes. Missouri had 152 broadband subscribers participating in the study. California had the largest number with 848 while South Dakota had the smallest number with 2. Approximately 7 out of the 13 broadband providers operate in Missouri (AT&T, CenturyLink, Charter, Comcast, Mediacom, TimeWarner Cable and Windstream).

[98] Noting fixed (i.e., wireline) and mobile broadband technologies may differ so the FCC is seeking further comment on how to compare mobile broadband to fixed broadband as product offerings evolve over time. FCC Report and Order and Further Notice of Proposed Rulemaking in Docket Nos. 10-90, 09-51, 07-135, 05-337, 01-92, 96-45, 03-109 and 10-208. October 27, 2011. Paragraphs 1021-1024.

Most Consumers Lack Awareness of Broadband Speeds

Consumers appear to lack awareness of their broadband speeds. For example different studies suggest most consumers do not know what speed they have purchased from their broadband provider.[99] This finding appears to be confirmed by Missouri's mapping efforts whereby various verification efforts queried consumers about their broadband service. Such efforts has caused Missouri researchers to state, "…Residents often did not know what their service level was nor what their speed of service was…."[100]

VII. Solicitation of Input from the Public and All Providers of Broadband Services

This section attempts to summarize feedback and survey results reflecting input from the public as well as broadband service providers. The Missouri PSC solicited feedback for this report whereby comments are summarized. The results of two recent broadband-related surveys are revealed whereby one survey involved a random sampling of 76,000 residential Missouri consumers and another survey was an on-line survey for Missouri businesses. The results of a third Missouri survey are also discussed which represented information obtained at regional and state fairs along with the speed test portion of Missouri's broadband web site. Finally, the results of a recently released study of broadband adoption issues are discussed.

Comments Received by the Missouri PSC

The Missouri PSC opened Case No. TW-2010-0362 on June 30, 2010 for the purpose of gathering information for this report. The Commission invited comments responsive to the Senate Committee's request. A copy of the Commission's order with distribution list is attached as Schedule No. 9. In addition the Commission made the notice available to the news media and the members of the General Assembly. Comments were received from fourteen entities. All comments are publically available within the case file for Case No. TW-2010-0362.[101] A summary of these comments is provided below:

City of Poplar Bluff: *The State should encourage municipalities to provide broadband service. At least provide connectivity to their governmental, police and fire department sites.*

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[99] For example, a 2010 survey conducted by Abt/SRBI and Princeton Survey Research Associates, International interviewed 3,005 American adults and found 80% of home broadband users do not know the speed of their home internet connection. See also a paper by John Horrigan and Ellen Satterwhite entitled "Americans' Perspectives on Online Connection Speeds for Home and Mobile Devices".

[100] Data Collection and Process, Missouri Broadband Data Development submitted to the National Telecommunications and Information Administration by GeoDecisions, State of Missouri and the University of Missouri; October 1, 2011, page 12.

[101] Comments are electronically accessible through www.mo.psc.gov by accessing the Commission's Electronic Filing and Information System via "EFIS". Once within EFIS click-on "Filing/Submission" then "Docket Sheet" and finally insert "TW-2010-0362" in case file box.

TracFone Wireless, Inc.: *Need to consider addressing adoption barriers such as affordability for broadband service by providing assistance to approximately 700,000 Missouri households below the $25,000 income level.*

The Empire District Electric Company: *The largest barrier to broadband availability is the prohibitive cost of delivering service to rural or sparsely populated areas. Need to subsidize or incentivize potential providers.*

Missouri Telecommunications Industry Association: *Recommend relying on state broadband mapping project to assess broadband deployment. Recommend initiating a discussion and analysis of policy recommendations given the wide-ranging policy debate on the National Broadband Plan. A guiding principle of any policy should be both technology and provider neutral and focus on encouraging private investment and innovation. Government initiatives that increase broadband adoption and demand can help stimulate return on investment. Policies that lower any existing barriers to investment, such as excessive right-of-way fees, local taxes, pole attachment charges and the like could also create a more positive climate for further broadband investment.*

Northeast Missouri Rural Telephone Company: *Barriers to broadband deployment include costs to deploy, government red tape and rural outmigration and uncertainty.*

Google: *The Google Fiber project in Kansas City demonstrates how partnerships with local governments can make broadband more widely available. Removing overly restrictive regulations associated with rights-of-way access would significantly further broadband deployment. "Dig once" policies (i.e., require the installation of conduit anytime a roadway is opened for any purpose) help reduce costs for subsequent fiber deployment. Restrictions on using private rights-of-way can have a chilling effect on business. Need to reevaluate pole attachment regulations because companies solely providing broadband service do not have the same pole attachment rights as cable or telecommunications companies. Regulators and local governments should strive to implement more efficient decision-making and policymaking processes.*

AT&T: *Broadband availability can be helped by policies that streamline burdensome processes (e.g., local permitting requirements), minimize costs imposed on service providers (e.g., taxes, pole attachment prices), reduce investment barriers (e.g., legacy regulations like carrier of last resort obligations) and increase incentives (e.g., direct funding, demand stimulation). The FCC's recent decision to reform the federal universal service fund and intercarrier compensation has the potential to significantly impact broadband availability, particularly if the funds are directed to areas that remain unserved. Wise and prudent USF funding is a critical component for increasing broadband deployment. Public/private partnerships can be beneficial. Ensuring anchor institutions are served may help overcome economic hurdles of serving small rural areas. Programs designed to stimulate demand for broadband service can also help overcome the economic challenges of serving sparsely populated areas. Tax policies and other imposed costs, such as pole attachment rates, can impact broadband investment.*

Missouri Small Telephone Company Group (MoSTCG)[102]: *A survey that included many small Missouri incumbent local exchange companies found that broadband service was available to the following percentages of this group's rural customers: 200 kbps to 1.5 Mbps (99%), up to 3.0 Mbps (89%), up to 6.0 Mbps (78%), 6.0 Mbps and higher (53%). The greatest impediment to deploy broadband continues to be cost. MoSTCG companies have invested approximately $600 million in plant and, adjusting for accumulated depreciation, currently have approximately $265 million in net plant in service, including over 28,000 miles of cable. The 166 exchanges served by these companies cover over 12,530 square miles. MoSTCG companies employ approximately 630 people and serve nearly 91,000 access lines. The recent FCC decision to reform USF and intercarrier compensation may have significant and possibly adverse impacts that threaten the STCG companies' ability to deploy new broadband service.*

Sprint Communications Company L.P., Sprint Spectrum L.P. and Nextel West Corp.: *Can promote broadband development by adopting and enforcing policies promoting competition. Carriers should not be allowed to delay the FCC's recent decision to reform USF and intercarrier compensation. Missouri is in the top 5 nationwide for highest access rates whereby high termination rates is one of the primary reasons preventing carriers from investing in more broadband infrastructure. Missouri does <u>not</u> need a separate state USF. Should promote efficient interconnection of IP networks (i.e., costs increase if carriers must pay extra to convert IP traffic to other formats). Should ensure utilities and localities do not place unreasonable costs in permitting for wireless towers and other facilities.*

CenturyLink: *Supports comments filed by Missouri Telecommunications Industry Association. Should continue to monitor the FCC's reform measures and, to the extent necessary, be ready to act. The PSC should provide a report to the legislature at each phase of the FCC's reform plan. The greatest barriers to broadband deployment are the high cost and low adoption rates in underserved and unserved areas. The MoPSC should assess advertised versus actual broadband speeds by relying on the FCC's study released in August whereby the FCC concluded there is little disparity.   The MoPSC should submit a copy of the study to the legislature as part of its recommendations and findings.*

YourTel America, Inc.: *The status quo has failed to make broadband service affordable for all Missourians, especially low-income customers. YourTel is an active participant in the Lifeline program and a vocal supporter of broadband access for the underserved. Most Lifeline customers do not have broadband service. Many Missourians do not speak English whereby up to nineteen different languages are spoken in areas around Kansas City and St. Louis. Need a local presence in the neighborhood. Broadband service should be available on a prepaid basis because a prepaid arrangement offers many advantages.   A robust wholesale market is necessary to enable companies such as YourTel to provide broadband service to low-income customers that do not*

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[102] MoSTCG consists of 30 small Missouri ILECs who are represented by W.R. England, III.

speak English. Unfortunately YourTel has encountered nothing but roadblocks to obtain access to use an incumbent's wholesale DSL or cable modem product.

Association of Missouri Electric Cooperatives[103]: *Broadband service is not available in large parts of the state served by electric cooperatives. US Department of Agriculture 2009 study found rural broadband use nationally is only 41% with Missouri's use estimated to be much lower. Co-Mo Electric found that only 18% of its membership had wireline broadband service in their home. This same study showed that overall 74.8% were completely unserved and 8.3% underserved. Electric cooperatives have an interest in expanding broadband service in order to implement "smart grid" technologies. Rural electric cooperatives nationally are leading the way in new smart grid applications. Smart grid technology allows members to better understand and control electric usage plus it provides other benefits.*

U.S. Cable of Coastal-Texas, L.P.: *Company provides broadband service consisting of 3 Mbps or more to eleven Missouri communities.*

Missouri Cable Telecommunications Association: *The MoPSC should defer to the Missouri Office of Administration for information regarding the availability of broadband service within Missouri. The MoPSC should clarify in its report the source, projected use/areas and amounts of funding for the state available broadband projects.*

Northwest Missouri Regional Technology Infrastructure Task Force[104]: *Important to determine the baseline capability and network infrastructure that exists today. Without a clear picture of where high-speed broadband stands today, any construction or allocation of resources would not be in the best interest of Missourians. Every provider should be required to provide detailed data on their technology foot print. We must carefully evaluate the broadband speed intended to evaluate unserved and underserved. Although the FCC has established a target of 4 Mbps down and 1 Mbps up current applications in commerce, education and health care require significantly more than 4 Mbps. Missouri's stated public telecommunications policy objective is "ubiquitous phone access for all Missourians". This objective is consistent with early 20th century life and not 21st century realities.*

Grand River Telephone Company: *Very expensive to deploy broadband in rural areas; however, wireless service lacks adequate spectrum to meet the bandwidth needs of customers. Not all consumers recognize the value of a broadband connection. Need to demonstrate various uses and benefits of broadband service. Grand River offers Internet training to members and it has been well received. Company plans to offer more Internet training in the future.*

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[103] AMEC is the state association of Missouri's forty seven member-owned, nonprofit electric cooperatives that collectively provide electric service to more than 700,000 consumers, primarily in the rural portions of Missouri.

[104] NWMO RTITF is part of the Heartland Foundation which is a public charity. See www.hearlandfoundation.org.

Big River: *Consider making a state USF fund to support deployment of broadband for high cost areas and to support low income households, especially those households with students in K-12. Barriers concern middle mile broadband infrastructure. Such infrastructure is either lacking or if it exists the infrastructure may only be available from one provider with prohibitively high rates.*

Missouri Residential Survey Results Conducted by the 19 Missouri Regional Planning Commissions

Missouri's nineteen regional planning commissions surveyed residential consumers about broadband service during the summer of 2011.[105] According to survey organizers, Missouri's survey is the largest household assessment of Internet connectivity conducted by any state working with NTIA. In brief, each regional planning commission mailed the broadband survey to 4,000 randomly selected residential consumers. In total 76,000 surveys (4,000 * 19 = 76,000) were sent. The survey had a 13% response rate with almost 10,000 surveys returned.[106] The results of the survey are attached as Schedule No. 10.[107] Listed below are some of the more noteworthy findings:

88% of residential Missourians responding to this survey have Internet access at home.

Missouri respondents use the following types of technologies: Dial-up (9%), Cable modem (20%), Satellite (6%), Cellular (air card) (4%), DSL (37%), Fixed Wireless (7%), Other (2%), Don't know (2%).

The average monthly fee is: $42.87=Mean, $40=Mode.

"Broadband speed" is the factor cited by most residential survey respondents as being the decision factor in choosing the broadband connection type and service provider. "Only available service" is the next most cited decision factor; however, rural residents are significantly more likely to cite availability than non-rural residents, as suggested by the results below:

Why did you choose this connection type and service provider?	
Decision Factor	**Total**
Broadband Speed	34%
Only Available Service	27%*
Cost	22%
Most Reliable in My Area	13%
Other (N=513)	4%
Top 3 Other Responses	Only option.Bundle.Dial-up too slow.

*Most of the respondents citing this factor (77%) reside in "rural" areas.

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[105] Information about the 19 regional planning commissions is available on the web site www.mobroadbandnow.com.

[106] This response rate exceeded organizer's expectations of a 10% response rate.

[107] Survey results were presented by Connie Ledoux Book, Ph.D. of Elon University at the November 17, 2011 Missouri Broadband Summit.

Most residential survey respondents appear to be satisfied with their broadband speed (68%) as well as reliability (76%) while most respondents (53%) are dissatisfied with the number of providers available in their area. Respondents appear to be split on satisfaction with broadband cost. Such results are summarized below:

Satisfaction with Broadband Service Characteristics				
Level of Satisfaction	Speed	Cost	Reliability	# of providers
Very Satisfied	15%	9%	19%	6%
Satisfied	53%	42%	57%	21%
Dissatisfied	18%	32%	15%	25%
Very Dissatisfied	13%	15%	8%	28%
Don't know/NA	1%	2%	1%	20%
Total	100%	100%	100%	100%

Most respondents believe it is important for all Missouri residents to have access to computers and the Internet as reflected in the following results:

How important is it for all Missouri residents to have access to computers and the Internet?	
Level of Importance	Percentage of Respondents
Very Important	49%
Important	23%
Somewhat Important	14%
Not at all Important	6%
Don't Know	8%

Missouri Business and Industry Survey Results

An on-line survey was conducted between April and October 2011 on the www.mobroadbandnow.com web site. Chambers and professional organizations were contacted to encourage their members to participate and complete the survey. Ultimately 1,182 surveys were completed. Surveys were completed by business respondents representing all Missouri counties, including each of the nineteen Missouri Regional Planning Commissions. Complete survey results are compiled in Schedule No. 11. Some of the more noteworthy results are described below:

Most business survey respondents (95%) have Internet access at their business.

Most respondents appear to be satisfied with their broadband service, as shown below:

Satisfaction with Broadband Service Characteristics				
Level of Satisfaction	Speed	Cost	Reliability	Training/Support
Very Satisfied	12%	13%	19%	14%
Satisfied	42%	47%	54%	47%
Dissatisfied	25%	22%	18%	16%
Very Dissatisfied	20%	9%	9%	8%

Don't know/NA	1%	9%	1%	15%
Total	100%	100%	100%	100%

Most business respondents claim a robust broadband connection is very important to the day-to-day operations of the business:

How Important is a Robust Broadband Connection to the Day to Day Operations of Your Business?	
Level of Importance	Percentage
Very Important	87%
Important	11%
Somewhat Important	2%
Not at all Important	.1%

Most business respondents (95%) indicate it would be beneficial if the broadband environment in their area was enhanced. The majority of respondents indicated few choices in broadband service:

At your location how would you describe the availability of multiple, competing broadband options?	
Response	Percentage
Competitive, several options	10%
Somewhat competitive, two providers	31%
Not competitive at all, only one provider option	42%
There is not a broadband option available that is suitable for my business	16%

Survey results via fairs/Ookla portion of the www.mobroadbandnow.com web site.

Missouri SBDD officials conducted an additional survey in 2010 and 2011 by visiting state and regional fairs to obtain feedback from Missouri residents. In addition, feedback was gathered from the Ookla portion of the www.mobroadbandnow.com web site. This portion of the web site allows users to test their broadband speeds; however, consumers were also asked to fill-out certain information about their current Internet service. Ultimately, 6,185 Missourians took the survey. Consumers were asked to rate their level of satisfaction with their current Internet service. Overall, this survey suggests less satisfaction and perhaps more indifference than the previously described survey results obtained through the regional planning commissions. Listed below are the results:

Level of Satisfaction with Current Internet Service *(Survey results via fairs/Ookla portion of web site)*	
Extremely Satisfied	8.6%
Satisfied	20.9%
Neutral	20%
Dissatisfied	10.8%
Extremely Dissatisfied	7.7%
Null (Don't know)	31.8%

National Study of Broadband Adoption

A recent study attempted to analyze broadband adoption and what factors significantly impact whether a consumer subscribes to broadband service.[108]   The study is based on a survey conducted by the Census Bureau of 54,300 households regarding computer and Internet use. The study uses statistical methods to extrapolate survey results to represent 119.5 million American households. The study finds that as of October 2010 over three-fourths (77%) of households had a computer. Approximately 68% of households used broadband service, up from 64% one year earlier. Cable modem (32%) and DSL (23%) ranked as the most commonly used broadband technologies while dial-up access continued to decline to 3%.

State Comparison of Broadband Adoption Rates

States differ on the percentage of households adopting broadband service.[109] For example Mississippi and Arkansas are tied with the lowest broadband adoption rate of 52%. In contrast, Utah has the highest broadband adoption rate at 80%. The study estimates the percentage of Missouri households with broadband service is 64%.[110] The study states the broadband adoption rates for each state are simply intended for ease of understanding and not necessarily as a ranking among states. Nevertheless, thirty-seven other states have higher broadband adoption rates than Missouri.

Factors Influencing Broadband Adoption

The study observes how broadband adoption rates can vary depending on such factors as income, education, race, ethnicity, geographic location and other factors. Listed below are factors influencing broadband adoption:

Income: The broadband adoption rate for households with annual income of less than $25,000 is 43% versus 93% for households with annual income of $100,000 or more.

Presence of School-Aged Children: Broadband adoption is 78% for a household with school-age children versus 65% for households without school-age children.

Household Age: The broadband adoption for householder age ranging from 16-44 years is 77% compared to 45% for households aged 65 years and older.

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[108] *"EXPLORING THE DIGITAL NATION Computer and Internet Use at Home"* Economics and Statistics Administration and NTIA in the U.S. Department of Commerce ("Commerce Dept. Study"). November 2011.

[109] Figure 12, page 18 of E in Commerce Dept. Study.

[110] Figure 13 in Commerce Dept. Study indicates Missouri's urban areas have a broadband adoption rate of 69% versus 49% for Missouri's rural areas.

Geographic area (Urban vs. Rural): The broadband adoption rates are 70% in urban areas versus 57% in rural areas. The study analyzed this factor in greater detail by attempting to control for demographic characteristics.[111] After controlling for various socio-economic differences, this 13 point gap is reduced to five percentage points.

Race: The broadband adoption rate for Whites is 72%, while the adoption rate is 55% for Blacks. This 17 point gap is reduced to 11 percentage points after controlling for other factors.

Disability: The broadband adoption rate for households headed by someone with a disability is 43% versus 72% for a household with no disability. This 29 point gap is reduced to 6 points percentage points after controlling for other factors.

Main Reason for Not Having Broadband Service

The study asked households without broadband service to state their main reason for not having broadband service. The study breaks down this information based on households using dial-up service versus households with no service at all/no computer. Although the overall number of households significantly differs between these two groups, the main reason for not subscribing to broadband service also differs between these two groups. The top three reasons for each group are identified in the table below:

Main Reason for Not Subscribing to Broadband Service[112]		
Reason	Households with Dial-Up *(3.4 million households)*	Households with No Computer *(34.6 million households)*
Broadband Unavailable	27%	
Broadband Too Expensive	34%	24%
Don't Need It. Uninterested.	33%	47%
No computer/computer inadequate.		15%

VIII. Barriers to Broadband Deployment

The FCC's National Broadband Plan acknowledges broadband deployment has many barriers.[113] The FCC's most recent Broadband Progress Report also discusses barriers.[114] Stakeholders

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[111] It may be misleading to simply assume living in an urban area increases the probability of subscribing to broadband service because it is unclear how much of the urban/rural gap is caused by other factors. For example income and education are likely to be higher in urban areas if employment opportunities requiring high level of skill and specialization are disproportionately located in urban areas. This study attempts to compare broadband adoption between urban and rural households that are otherwise similar with respect to such key determinants as income, education, race and so forth.

[112] Figure 19, page 35 in Commerce Dept. Study.

[113] Barriers are generally discussed on pages 167-199 of the FCC's National Broadband Plan.

[114] FCC's Seventh Broadband Progress Report, pages 33-38.

submitting feedback for this report have also identified and highlighted certain barriers to broadband deployment. Listed below are some of the barriers as well as a brief discussion as to what efforts are being done to address a particular barrier:

The private sector will not deploy broadband where there is no business case for operating a broadband network. Congress has attempted to help address this issue by allocating approximately $7 billion in broadband deployment funding through the Broadband Technology Opportunities Program and the Broadband Initiatives Program.[115] In addition, the FCC recently reformed the federal universal service fund as a way to modernize this fund and help ensure areas that are uneconomic to serve have broadband service. The FCC has also proposed the creation of a Mobility Fund to help improve mobile broadband coverage.

Key inputs for broadband infrastructure are difficult to access (i.e., utility poles, conduits, rooftops, tower sitings and rights-of-way). The FCC has attempted to improve access to poles and reduce pole attachment rates.[116] The FCC has also established standards to ensure the timely processing of wireless tower siting requests.[117] The FCC has opened a Notice of Inquiry to further improve access to rights-of-way and siting wireless facilities.[118] In addition the FCC has created the Broadband Acceleration Initiative whereby the FCC is exploring ways to reduce barriers to broadband deployment.[119]

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[115] BTOP is administered by NTIA whereby over $4 billion in grants have been issues for broadband deployment. BIP is administered by the U.S. Department of Agriculture's Rural Utility Services whereby $3 billion in loans and grants have been allocated to help broadband deployment in rural areas.

[116] The FCC has issued two separate decisions relating to improving issues related to pole attachments. One decision clarifies rights of pole attachers by ensuring timely access to poles. Order and Further Notice of Proposed Rulemaking; WC Docket No. 07-245, *In the Matter of Implementation of Section 224 of the Act*; FCC 10-84; released May 20, 2010. The second decision reduces the rate disparity for pole attachment rates. Report and Order and Order on Reconsideration; WC Docket No. 07-245, *In the Matter of Implementation of Section 224 of the Act*; FCC 11-50; released April 7, 2011.

[117] Declaratory Ruling; WT Docket No. 08-165 *In the Matter of Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B) to Ensure Timely Siting Review and to Preempt Under Section 253 State and Local Ordinances that Classify All Wireless Siting Proposals as Requiring a Variance*; FCC 09-99; released November 13, 2009. Essentially the FCC clarified time frames for a tower siting applicant to take the matter to court if a local government failed to respond in a timely manner to the applicant's tower siting request.

[118] Notice of Inquiry; WC Docket No. 11-59 *In the Matter of Acceleration of Broadband Deployment: Expanding the Reach and Reducing the Cost of Broadband Deployment by Improving Policies Regarding Public Rights of Way and Wireless Facilities Siting*; FCC 11-51; released April 7, 2011.

[119] This FCC initiative was established in February 2011 and included a variety of actions to explore ways to reduce barriers to broadband deployment. For instance the FCC held a Broadband Acceleration Conference in February 2011 whereby the FCC brought together officials from federal, state and local governments, broadband providers, telecommunications carriers, tower companies, equipment suppliers and utility companies to identify opportunities to remove barriers to broadband buildout. In addition the FCC created a Task Force to develop specific goals and timelines for reducing barriers to broadband buildout by at least 20 percent. A Technical Advisory Council was formed to report on specific steps the FCC can take to spur buildout. Lastly the FCC indicates the need to eliminate unnecessary regulations and improve the way the FCC operates as a way to help spur broadband deployment.

Lack of "middle-mile" infrastructure.   The FCC is currently collecting and analyzing data regarding special access circuits used to link cell phone towers, carry data to the Internet and serve high-volume customers.[120]

Insufficient spectrum for wireless broadband. The FCC is striving to expand available spectrum in a number of different proceedings.[121]

Some consumers won't subscribe to broadband service for a variety of reasons (unaffordable, irrelevant, digital illiterate, privacy concerns): The FCC is attempting to address broadband affordability concerns by expanding the Lifeline and LinkUp programs to ensure qualifying low-income consumers have access to broadband service.[122]   The FCC expects competition between broadband service operators will ultimately help make broadband service more affordable in some areas. The FCC also has conditioned its approval of transactions whereby companies involved in the transaction will commit to implement programs of discounting broadband service rates to low-income consumers.[123]

IX.   <u>Recommendations and Potential Public Policy Decisions to Increase Deployment and Availability of Broadband Services (How to Maximum Broadband Development in Missouri) (Within Five Years at Varying Speeds and Rates)</u>

A basic decision is how much of a role the government should exert to expand broadband availability. A study finds 53% of Americans find expansion of affordable broadband should <u>not</u> be a high priority of government.[124]   Nevertheless the FCC is leading the effort to expand broadband availability and has initiated many different proceedings designed to address broadband-related issues and expand broadband availability. Moreover, it remains unclear what impact the FCC's USF and intercarrier compensation reform decisions will have on companies. In this regard,

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[120] Public Notice; Competition Data Requested in Special Access NPRM, WC Docket No. 05-25, RM-10593; released September 19, 2011.

[121] For example, see Fourth Further Notice of Proposed Rulemaking; WT Docket No. 03-66, RM-11614 *In the Matter of Amendment of Parts 1, 21, 73, 74, and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*; FCC 11-81; released May 27, 2011. See also Report and Order, Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order; WT Docket No. 10-153 *In the Matter of Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees*; FCC 11-120; released August 9, 2011.

[122] Notice of Proposed Rulemaking; WC Docket No. 11-42 *In the Matter of Lifeline and Link Up Reform and Modernization*; FCC 11-32; released March 4, 2011.

[123] The FCC points to its decisions in two recent transactions. One transaction involved Comcast's purchase of NBC and the other transaction pertained to CenturyLink's purchase of Qwest. Both Comcast and CenturyLink agreed to establish programs offering discounted broadband service to low-income consumers.

[124] "Home Broadband 2010"by Aaron Smith released through Pew Internet on August 11, 2010. www.pewinternet.org

the FCC should be given more time to implement its broadband action agenda before states attempt to initiate any additional action. More time will also allow better evaluation of broadband availability data and reconcile differences between the FCC's analysis and state broadband mapping efforts.

If there is a strong desire to proceed with state action within Missouri then consideration may be given to the following options:

The Missouri USF could potentially be used to help with broadband deployment. For example, funding could be used to supplement federal funding for providing broadband service to high-cost areas. In addition, the Missouri USF could be used to help make broadband service more affordable for low-income consumers by providing discounted broadband service rates. Such action, if desired, would require changes to Missouri statutes to clearly enable the Missouri USF to be used for such purposes. In addition, the issue of whether wireless providers should be assessed to pay into the Missouri USF will need to be addressed as well as whether wireless providers could receive Missouri USF support.

Missouri could attempt to regulate pole attachments. If so, Missouri statutory change will be needed to enable such authority.

Missouri could make it easier for municipalities to provide broadband service by allowing municipalities to provide broadband service along with voice and video services.

Missouri might strive to create programs to stimulate the demand for broadband services.

Efforts to further public/private partnerships might be beneficial.